REMARKS

In the Office Action dated March 28, 2003, the Examiner objects to the drawing figures. The Examiner rejects claims 1, 2, 4-7, 9, 11, 12 and 15-20 under 35 U.S.C. § 112, first and second paragraphs, and rejects claims 1-7 and 9-12 under 35 U.S.C. § 103(a). After entry of this Amendment, claims 1-7 and 9-20 are pending in this application. Claims 1, 3, 9-11, 13, 14, 17 and 20 have been amended to more particularly point out and distinctly claim the subject matter that the Applicant regards as the invention. No claims have been added or cancelled. Reconsideration of the application as amended is requested.

The Examiner objects to Fig. 3, stating that it should be labeled Prior Art. The attached replacement sheet complies with the Examiner's request. Withdrawal of the Examiner's objection is respectfully requested.

The Examiner rejects claims 1, 2, 4-7, 9, 11, 12 and 15-20 under 35 U.S.C. § 112, first and second paragraphs. With respect to the first paragraph rejection, the Examiner states that the Applicant's representation in its previous response that "the term 'dark' is not used in the claim or in the application as defining the lighting conditions in which the pixel exists," combined with Ueno's definition of a conventional dark pixel in terms of lighting conditions in which the pixel exists, makes it unclear to one of ordinary skill in the art how to make and use the invention because of the confusion over what a dark pixel is. It is respectfully submitted that the Applicant's representation was correct and was made to clarify that the Examiner's prior assertions that Bos, et al. discloses in Figure 7 dark pixels and normal pixels, reasoning that when light is turned off the pixels are dark and when is light is turned on the pixels are normal. Bos et al. does not include dark pixels as one of skill in the art understands them, which is shown by Ueno. It is respectfully submitted that Ueno shows that a dark pixel to one of skill in the art is not defined by the lighting conditions in which the pixel exists. Instead, Ueno defines a dark pixel as one covered by a conductive light shielding layer, which the Examiner also points out in the Office Action. Thus, one of skill in the art would know what a dark pixel is, so can make and use the invention.

With respect to the second paragraph rejection, the Examiner states that it is unclear in the claims what a "dark" pixel is as set forth in the first paragraph rejection. It is

respectfully submitted that the Examiner's interpretation of a dark pixel having a shielding layer as defined in Ueno is correct. The Applicant believes that this clarification is sufficient to satisfy the Examiner's concerns. However, if additional clarification is needed, the Applicant will amend the claims to clarify that the dark pixel is a reference dark pixel. On page 5, lines 5-8 of the specification, it is disclosed that the dark pixels can be used to determine an absolute value of ambient light. From this description, one of ordinary skill would recognize that the dark pixels 26 are not operable to receive ambient light and, therefore, provide a reference with respect to the pixels 22a that are operable to receive ambient light. It is respectfully submitted that claims 1, 2, 4-7, 9, 11, 12 and 15-20 meet the requirements of both the first and second paragraphs of 35 U.S.C. § 112.

The Examiner rejects claims 3 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Michenfelder et al. (6,376,824). The Examiner states that Michenfelder et al. teaches each and every element of these claims when combined with obvious modifications within the level of skill in the art. Each of claims 3 and 13 have been amended to clarify antecedent basis for the value throughout. In addition, the sensor has been clarified to explain that the sensor is operable to emit at least one signal corresponding to the sensed conditions instead of "a signal." The unnecessary phrase "as a result of the comparison" has been removed. Finally, the timer means has been clarified to state timer means for selectively disabling the processor means from comparing the absolute ambient light value to the predetermined value for a programmed period of time. It is respectfully submitted that the Examiner has failed to make a *prima facie* case of obviousness.

The Applicant has carefully reviewed Michenfelder et al. and has been unable to find any teaching or suggestion of processor means for determining an absolute ambient light value corresponding to existing ambient light conditions using the at least one signal, for comparing the absolute ambient light value to a predetermined value, and for emitting a control signal if the absolute ambient light value is less than the predetermined value. Even more particularly, Michenfelder et al. does not mention an absolute ambient light level at all. Like the other references cited by the Examiner, relative ambient light is used in Michenfelder et al. Sensed light, like sensed speed according to the vehicle speedometer, is relative. To determine an

absolute ambient light level from a relative level, some reference is needed. For example, a vehicle's absolute speed can be determined from its relative sensed speed by a reference such as one provided by a GPS. Michenfelder et al. teaches no reference from which to determine an absolute ambient light value. Since the claim recites an absolute ambient light level, and Michenfelder et al. fails to teach or suggest this feature, Michenfelder et al. cannot teach or suggest the steps of the processor means described above.

Further, it is respectfully submitted that Michenfelder et al. fails to teach or suggest timer means for selectively disabling the processor means from comparing the absolute ambient light value to the predetermined value for either a predetermined or a programmed period of time. As is clear from the passage cited by the Examiner, Michenfelder et al. does not use the clock signal 15 to selectively disable the processor means from comparing any light value to any other value. The clock signal 15 is used to trigger the transmitter diode 14 in clocked fashion so that the evaluation circuit can associate signals received by the receiver 16, 20 with the transmitter 14 or with any electromagnetic waves arriving in the opening cone 40 with the ambient brightness to determine whether the windshield wiper system and/or the light system of the motor vehicle should be put into action. (Col. 6, ll. 1-14). Essentially, during one half of the cycle, the signal reflected includes light generated by the transmitter 14, while during the other half of the cycle, the signal reflected includes only ambient light. It would be contrary to the teachings of Michenfelder et al. to shut down the evaluation circuit in accordance with the signal 15. This is because the evaluation circuit needs inputs from the receiver 16, 20 during the entire signal 15 in order to determine what to activate on the vehicle. For all of the foregoing reasons, claims 3 and 13 are allowable over the prior art of record.

The Examiner rejects claims 3, 10 and 13 under 35 U.S.C. § 103(a) as being unpatentable over Bos et al. (6,313,454) in view of Turnbull et al. (6,465,963). Claim 10 has been amended similarly to claim 3 and 13 to clarify antecedent basis for the value throughout, to clarify that the sensor is operable to emit at least one signal corresponding to the sensed conditions instead of "a signal" and to remove the unnecessary phrase "as a result of the comparison." With respect to each of these claims, Bos et al. fails to teach or suggest processor means for determining an absolute ambient light value corresponding to existing ambient light

conditions using the at least one signal, for comparing the absolute ambient light value to a predetermined value, and for emitting a control signal if the absolute ambient light value is less than the predetermined value because Bos et al. does not mention an absolute ambient light level at all. As explained in more detail above with respect to Michenfelder et al., sensed light is relative. In any case, Bos et al. does not teach or suggest comparing a level of ambient light to a predetermined level, contrary to the Examiner's assertion. In fact, Bos et al. merely compares the number of edges, that is, the number of transition changes in the level of light between adjacent pixels, to a threshold level of transition changes (number of edges). Basically, this method uses the number of transitions to determine the level of precipitation on the windshield. The actual levels of the reflected light from each of the pixels is irrelevant in Bos et al. Bos et al. emits control signals when a comparison indicates that the number of edges is greater than, not less than, a threshold value. (Bos et al., Abstract; col. 21, ll. 14-16). It is respectfully submitted that the addition of Turnbull et al. to Bos et al. fails to cure these deficiencies because Turnbull et al. also relies on relative ambient light. Turnbull et al. uses other parameters, such as the amount of sky blockage, the vehicle velocity and/or the time of day to prevent excessive switching, but Turnbull et al. does not teach or suggest determining an absolute ambient light level for any purpose. Thus, the combination fails to teach or suggest all of the features of any of claims 3, 10 and 13.

In addition, it is respectfully submitted that one of skill in the art would not be motivated to combine the teachings of Bos et al. or Turnbull et al. as suggested by the Examiner to render any of these claims obvious. With respect to claims 3 and 13, it is respectfully submitted that one of skill would not be motivated to include a delay 312 as taught by Turnbull et al. in combination with Bos et al. because Bos et al. uses the processor to determine only whether or not to turn on windshield wipers and a blower in response to the same input signals. In contrast, Turnbull et al. teaches a complete electrical control system that will require the processor for various additional functions that requires the processing of other data. Bos et al. does not need a delay. Further, the delay in Turnbull et al. does not appear to be a programmed delay in any case. Instead, the delay appears to variably result from interrupts and other processor inputs. With respect to claim 10, Bos et al. does not perform the comparison of ambient light

level to any threshold value at all. Thus, there is no motivation to include the stated features of Turnbull et al. of comparing the relative ambient light to different threshold values, which still does not teach or suggest the use of an absolute ambient light level.

For the foregoing reasons, the invention as described by each of claims 3, 10 and 13 is allowable over the prior art of record.

The Examiner rejects claim 1 and its dependent claims 2, 4-7 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Bos et al. in view of Ueno (5,214,272). Claim 1 has been amended to clarify antecedent basis for the value throughout and to clarify that the sensor is operable to emit signals corresponding to the sensed conditions at each of the plurality of dark pixels and each of the plurality of standard pixels. In addition, the unnecessary phrases "for sensing the presence of moisture on a moisture collecting surface" and "as a result of the comparison" have been removed. The unnecessary comparing step has also been removed. A conforming change has been made to claim 9. It is respectfully submitted that Bos et al. fails to teach or suggest the feature of claim 1 and its dependent claims of processor means for determining an absolute ambient light value corresponding to existing ambient light conditions using the signals, and for emitting a control signal if the absolute ambient light value is less than the predetermined value for the reasons stated with respect to claims 3 and 13.

Further, the addition of Ueno to a combination including Bos et al. does not teach or suggest all of these features because Ueno's only relevant teaching is the inclusion of dark pixels in the optical sensor. The combination fails to teach or suggest all of the features of the processor means described previously. In the preferred embodiment of the invention, an absolute ambient light value is determined as a function of the signals from the standard and dark pixels.

The Applicant assumes that the rejection of claim 10 under 35 U.S.C. § 103(a) as being unpatentable over Bos et al. in view of Ueno is a typographical error because claim 10 is not addressed in the detailed discussion of this rejection. In any case, the Examiner has failed to show where the recited combination teaches or suggests all of the features of claim 10 as described in the prior rejection based upon Bos et al. in view of Turnbull et al., and Ueno's addition to the combination does not solve the deficiencies.

The Examiner rejects claim 11 and its dependent claims 12, 15 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Bos et al. in view of Ueno. Claim 11 has been amended similar to claim 1 except that the plurality of standard pixels for sensing the presence of moisture on a windshield of a vehicle remains. For the reasons stated with respect to claim 1, claim 11 is allowable over the prior art of record.

The Examiner rejects claim 17 and its dependent claims 18-20 under 35 U.S.C. § 103(a) as being unpatentable over Bos et al. in view of Ueno. The method of claim 17 has been rewritten to claim a method including the steps of sensing an image with an optical moisture sensor having a plurality of dark pixels and a plurality of standard pixels, the sensor operable to emit signals corresponding to sensed conditions at each of the plurality of dark pixels and each of the plurality of standard pixels, receiving the signals and determining an absolute ambient light value corresponding to the existing ambient light conditions using the signals, and emitting a control signal if the absolute ambient light value is less than the predetermined value. Claim 20 has been amended to remove the unnecessary phrase "with controlling means." It is respectfully submitted that claim 17 and its dependent claims 18-20 are allowable over the prior art of record.

Bos et al., even if combined with Ueno, fails to teach or suggest the steps of determining an absolute ambient light value corresponding to the existing ambient light conditions using the signals, and emitting a control signal if the absolute ambient light value is less than the predetermined value. As mentioned, Bos et al. does not care about the ambient level. Instead, Bos et al cares only about the transitions between sensed signals from the pixels. Further, Bos et al. does not discuss absolute ambient light values at all. Finally, Bos et al. compares the number of edges with a predetermined number of edges, but does not emit a control signal if the measured value is less than a predetermined value, but instead emits a control signal if the measured value is greater than the predetermined value. The combination also fails to teach or suggest the features of claim 17 and its dependent claims. For the foregoing reasons, the invention as defined by claim 17 and its dependent claims 18-20 is patentable over the prior art of record.

Claim 14 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Bos, et al. In view of Marguinaud et a. (4,412,181). Claim 14 has been amended as described with respect to claims 3, 10 and 13. Specifically, claim 14 has been amended to clarify antecedent

basis for the value throughout, to clarify that the sensor is operable to emit at least one signal corresponding to the sensed conditions instead of "a signal" and to remove the unnecessary phrase "as a result of the comparison." First, as previously mentioned, Bos et al. fails to teach all of the features of claim 14 because Bos et al. fails to teach or suggest processor means for receiving the at least one signal, for determining an absolute ambient light value corresponding to existing ambient light conditions, for comparing the absolute ambient light value to a predetermined value, and for emitting a control signal if the absolute ambient light value is less than the predetermined value as explained in greater detail in the discussion of claims 3 and 13.

In addition, it is respectfully submitted that Marginaud et al. is non-analogous art to the present invention. Marginaud et al. is directed to a process for the demodulation of an amplitude modulated signal resulting from amplitude modulation with a suppressed carrier in phase quadrature for video frequency signals typically related to television systems. Not only is Marginaud et al. non-analogous art to the field of optical rain sensors, but it does not address any problem identified in the art of optical rain sensors. The Applicant identifies the desirability in the art to prevent temporary, relatively lower ambient light conditions from resulting in the emission of a control signal 20 from the processor 14. In Marginaud et al., there are two detection circuits that separately detect the amplitude and angle values from respective calculating devices to determine the presence of a color synchronization signal, or a burst, based upon expected values when a burst is detected, including both magnitude and duration. The successive comparisons are not designed to prevent temporary conditions from resulting in a control signal, but instead are designed to detect something of expected duration. (Marginaud et al., col. 5, line 59 to col. 6, line 59).
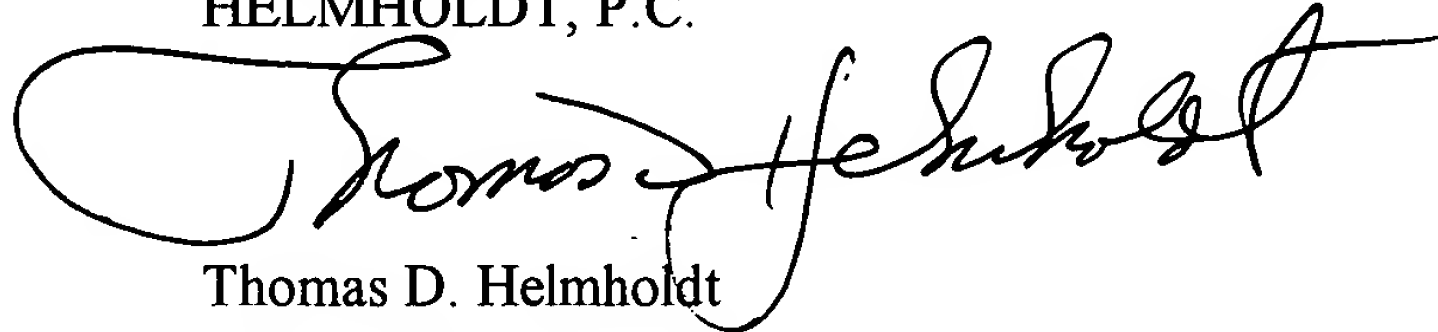
Finally, there is no motivation for including such a feature in Bos et al., even if Marginaud et al. did teach or suggest the feature of claim 14 wherein the processor means emits the control signal only if at least two successive comparisons indicate the absolute ambient light value is less than the predetermined value. Bos et al. does not do a comparison of ambient light, relative or absolute, at all. Further, Bos et al. emits control signals when a comparison indicates that the number of edges is greater than a threshold value. (Bos et al., Abstract; col. 21, ll. 14-16). For the foregoing reasons, claim 14 is allowable over the prior art of record.

　　　　It is respectfully submitted that this Amendment traverses and overcomes all of the Examiner's objections and rejections to the application as originally filed. It is further submitted that this Amendment has antecedent basis in the application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the application. Reconsideration of the application as amended is requested. It is respectfully submitted that this Amendment places the application in suitable condition for allowance; notice of which is requested.

　　　　If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the Applicant's attorney at the telephone number listed below.

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